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Attorneys for Plaintiffs  
SYNAPTICS INCORPORATED

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION

SYNAPTICS INCORPORATED, a Delaware  
corporation,

Plaintiff,

v.

ELANTECH DEVICES CORPORATION, a  
corporation existing under the laws of Taiwan,  
R.O.C.,

Defendants.

Case No. CV07-6434 CRB

**SUPPLEMENTAL  
DECLARATION OF ANDREW  
WOLFE Ph.D. CONCERNING  
CLAIM CONSTRUCTION FOR  
U.S. PATENT NO. 7,109,978**

**I. BACKGROUND AND QUALIFICATIONS.**

**A. Education and Professional Experience.**

1. I have been asked to provide additional opinions responding to Dr. MacKenzie's recent assertions. My background and qualifications are described in my September 18, 2008 Declaration. [Wolfe Decl. ¶1-6]

**B. Summary of Task.**

2. I was asked to review the October 3, 2008 declaration of Dr. Ian Scott MacKenzie. This declaration contained a number of opinions, characterizations, and other statements that did not appear in Dr. MacKenzie's expert report. I disagree with some of his contentions and I believe that some of Dr. MacKenzie's statements require clarification in order to clearly present the issue to the Court.

**C. Compensation.**

3. Regardless of the content of my opinions or the outcome, I am being compensated at my ordinary rate of \$350 an hour for my time devoted to participating as an expert in this case.

**II. OPINIONS TO BE EXPRESSED.**

**1. Level of Ordinary Skill**

4. Dr. Mackenzie has asserted that in paragraph 12 of my prior declaration, I agreed with his opinion on the level of skill that one of ordinary skill in the art with regard to this patent would require. [MacKenzie ¶7]. This is not the case. In my Rebuttal Expert Report, I opined that:

Our definitions of one of ordinary skill in the art differ slightly, with Dr. MacKenzie's definition including one additional year of experience, but I do not believe that the difference is significant nor that it should substantially impact the meaning of any of the claim terms. Notably, however, under Dr. MacKenzie's definition, one of ordinary skill in the art would have a more established understanding of the usage of common terms in the art and would therefore rely less on the embodiments disclosed in the patent to understand the meaning of terms.

This remains my opinion as to the distinction between our understandings of the level of skill required and the impact on the meaning of claim terms. One of ordinary skill in the art with regard to this patent would be highly familiar with the individual terms of art and other words used in the claims and would understand the breadth and scope of each term with respect to the claimed inventions without requiring specific definitions or examples in the patent specification.

## 2. Capacitance Profile

5. The patent's discussion of the prior art does not disclaim any particular type of capacitance profile. "Capacitance profile" is a term that has clear, ordinary meaning to one of skill in the art with respect to a capacitive touch sensor. It is a set of data representing capacitive information on conductive lines. The use of the term "capacitive profile" in the art to describe this set of data does not depend on specifically how the data was measured or in what order it was gathered. Moreover, the patent specifically teaches that this information is the claimed "profile" - "the capacitive information from the sensing process provides a profile of the proximity of the finger to the sensor in each dimension." ['978 Patent, 7:3-5; *see also* 12:29-31].

6. Dr. Mackenzie asserts (paragraphs 22 and 24-29) that the discussion of possible noise due to certain prior art methods that sequentially measure traces eliminates the possibility of performing the claim using that method. He further claims that the term "capacitance profile" can only refer to data gathered using a specific best-mode method disclosed in one preferred embodiment. Neither of these opinions is reasonable given the claim language and the teachings in the specification. The specification indicates that some prior art methods of measuring traces can be slow or produce some noise, however it never suggests that either of these problems is a barrier to implementing the claimed inventions, only that the results or performance may not be as good as in the preferred embodiment. This does not constitute a clear disclaimer of sequential scanning of traces. Additionally, even if such a disclaimer were to exist, it would be limited to the prior art methods discussed and would not apply to methods of measurement such as scanning groups or pairs of traces that are not related to the prior art discussion in the specification.

7. Furthermore, the discussion of how to best measure capacitive information is not relevant to the claims at issue in this case. These claims merely require that a capacitive profile be developed and that it can be examined. They do not claim any specific way of creating this profile and they do not require that it be created in the fastest way or with the least noise. All capacitive sensor measurements include noise. Methods of filtering or tolerating noise were well known in the art at the time of the invention. Nothing in the asserted claims or in the specification indicates that these claims require a minimal amount of noise in order to be practiced. In fact the portions of

1 the '978 specification that specifically describe embodiments that provide multi-finger gesture  
 2 detection do not refer to any particular method of measuring traces or creating the capacitive  
 3 profile. ['978 Patent, 46:46-50:2; 53:1-16] This is because these are not important factors in the  
 4 detection of multi-finger gestures as disclosed or as claimed.

5 8. Dr. Mackenzie also asserts that a capacitive profile must be “a complete set of  
 6 measurements.” This is more misleading than helpful. The complete set to which the patent refers  
 7 is the set of data that has been gathered, but this does not require that data be gathered from all  
 8 traces (at once or ever). Nothing in the patent teaches that every trace must be measured in order  
 9 to form a capacitance profile. Moreover, this is clearly not inherent in the term “capacitance  
 10 profile.” For example, if a sensor is constructed with 28 X-direction traces such that 26 of the  
 11 traces are accessible to the finger within the opening in the plastic keyboard cover, a system that  
 12 measures the capacitance of these 26 traces and creates a data structure representing these  
 13 measurements has clearly produced a capacitance profile of any objects on the touchpad.  
 14 Moreover, one of ordinary skill would understand that such a profile of an object or objects on the  
 15 touchpad could be used to practice the asserted claims. Dr. Mackenzie has asserted that my prior  
 16 declaration indicates some agreement with Elantech’s construction [Mackenzie ¶21]. This  
 17 mischaracterizes my testimony. The first cited paragraph from my prior declaration, paragraph 25,  
 18 discusses the measurement process at a high level and does not in any way indicate that the  
 19 specification limits the term capacitance profile. The second cited paragraph from my prior  
 20 declaration, paragraph 32, discusses a preferred embodiment, and states only that a plurality of  
 21 traces must be measured, not all of the traces.

### 22 **3. Developing Capacitance Profiles and Related Terms**

23 9. Each of the asserted claims includes one of the following phrases: “developing  
 24 capacitance profiles,” “develop a first capacitance profile,” “develop at least one capacitance  
 25 profile,” and “developing capacitance profiles in both said X and Y directions.” These phrases are  
 26 related in that they recite variations on the same concept, the step of developing a capacitance  
 27 profile. Once “capacitance profile” is construed, the meaning of “developing a capacitance  
 28 profile” is clear from the language itself. It means sensing and quantifying data regarding the

1 capacitance levels on conductive lines. Dr. Mackenzie clearly understands that this phrase has an  
 2 ordinary meaning and he uses it in his declaration, rejecting it out of hand when he states “[i]n  
 3 other words, I do not believe these terms cover just any way of developing capacitance profiles.”  
 4 [Mackenzie ¶23] However, the claims of the ’978 Patent as literally written refer just to  
 5 “developing capacitance profiles” without any limitation concerning how the capacitance profiles  
 6 are developed. One of ordinary skill reading the claim term “developing capacitance profiles”  
 7 would understand the term to mean any way of developing capacitance profiles. There is no  
 8 teaching in the patent to the contrary.

9 10. The ’978 Patent does indicate that one specific technique for scanning a touchpad  
 10 has a disadvantage, *i.e.* it could be “more susceptible to noise.” [’978 patent 4:11] The patent does  
 11 not teach that this disadvantage prevents the practice of any of the asserted claims or that the  
 12 improved scanning technique taught in the patent is fundamental to enabling any of the asserted  
 13 claims relating to the multiple finger gestures claimed in the ’978 Patent. As such, I do not believe  
 14 that one of ordinary skill would consider this a disavowal of any claim scope.

15 11. The patent specifically discloses in detail two embodiments of the driving and  
 16 sensing steps that can be used to gather that information that is used to develop capacitance  
 17 profiles. As, I have explained in my prior declaration (Wolfe ¶¶34-35), one of these embodiments  
 18 (called a preferred embodiment in the patent) teaches that traces are sampled simultaneously while  
 19 the second embodiment conspicuously contains no such teaching and leaves open the sampling  
 20 method. [Wolfe ¶35] Dr. MacKenzie illogically concludes that because one embodiment contains  
 21 this teaching it must apply to all embodiments:

22 Dr. Wolfe admits that “the first embodiment specifically describes “the  
 23 complete set of sampled points simultaneously giving a profile of the  
 24 finger.” Wolfe Decl. at ¶ 35. Thus, one of ordinary skill would conclude  
 that all of the embodiments disclosed in the ’978 patent simultaneously  
 scan traces when measuring for capacitance. [Mackenzie ¶27]

25 This does not make any sense. One embodiment requires simultaneous sampling of the traces and  
 26 one embodiment does not. To the extent this feature is even relevant to the claim terms at issue,  
 27 the specification embodiments cover both simultaneous and non-simultaneous sampling of traces.  
 28

1           12.     Dr. MacKenzie has also misunderstood the statements in the patent at 12:27-29 as  
2 referring to the second disclosed embodiment of the driving and sensing steps [MacKenzie ¶28].  
3 This paragraph is a portion of a discussion [’978 Patent, 12:4-34] that describes characteristics of  
4 the “presently preferred embodiment of the invention.” [’978 Patent, 12:4-5] This applies only to  
5 the first embodiment discussed at 12:36-47 which is called a “first and presently preferred  
6 embodiment of the invention” and not to the second embodiment discussed at 12:48-55.

7           13.     The prosecution history of the ’978 Patent reinforces the conclusion that  
8 “developing capacitive profiles” includes any method of developing such profiles and is not  
9 limited to “simultaneous” measurement. During the prosecution, the Examiner consistently used  
10 “developing capacitive profiles” as including prior art methods that involve sequential (rather than  
11 simultaneous) scanning. For example, the examiner cited a prior art patent, 5,256,975 to Mellitz,  
12 et al., specifically using the term “developing capacitive profiles” to describe Mellitz’s sensing and  
13 measuring step. Attached as Exhibit 1 hereto is a true and correct copy of the examiner’s  
14 September 7, 2005 Office Action, p. 3, first full paragraph (citing Figure 4 and column 3, lines 22-  
15 31). Those portions of the Mellitz patent describe “a ‘scan’ of the probe across the row of  
16 conductors or pads 11 produces a capacitance profile of Fig 4” and also say “a ‘scan’ might include  
17 one pad or conductor, or might include a row or column pattern of hundreds of pads.” One of  
18 ordinary skill would understand that this “scan” is conducted sequentially rather than  
19 simultaneously. This is particularly so because the embodiment of the invention described in the  
20 Melitz patent involves a hand-held probe 10, which is “*guided across the conductors or pad sites*  
21 *in the same way a pencil would trace the outline of the device,*” and which “contains a capacitance  
22 measuring circuit producing an output as a seen in FIG. 4, where the trace *is a plot of capacitance*  
23 *as a function of time.*” (*Id.*, Column 3, lines 7, 15-20 (emphasis added).) This embodiment results  
24 in a series of capacitance values for different locations that are measured at different times, rather  
25 than at the same time. Attached as Exhibit 2 hereto is a true and correct copy of U.S. Patent No.  
26 5,256,975. The applicant did not challenge this characterization, but distinguished the prior art on  
27 other grounds. The Examiner then granted the claims of the ’978 Patent over the cited Mellitz  
28 prior art without restricting them to any particular method of “developing a capacitance profile.”

1 (See Examiner's Notice of Allowability attached as Exhibit 3 hereto.) The Examiner emphasized  
2 that the claims were allowed because the prior art fails to teach "the uniquely distinct features" of  
3 "capacitance profiles identifying a simultaneous presence of at least two user input objects on the  
4 capacitive touch sensor pad," and "examining the capacitance profiles to determine an occurrence  
5 of a single gesture resulting from the simultaneous presence of the at least two user input objects."  
6 (*Id.* at page 2.) In other words, the Examiner concluded that the patentable invention of the '978  
7 patent was the recognition of a gesture consisting of the simultaneous presence of two or more  
8 objects on the touchpad, regardless of the specific method of "developing capacitance profiles."  
9 One of ordinary skill reviewing all of the intrinsic evidence would understand the term  
10 "developing capacitive profiles" to include all methods of "developing capacitance profiles,"  
11 including sequential scanning, as described in Mellitz, et al.

12 14. Dr. MacKenzie and Elantech appear to argue that references to "the invention," "the  
13 present invention," or "an object of the invention" in the '978 Patent necessitates that the claims  
14 mean something different than the literal words. This reading of the '978 Patent specification  
15 ignores the fact that the '978 Patent specification has many inventions in it and the ones that  
16 Elantech references have nothing to do with the multiple-finger gestures inventions claimed in the  
17 '978 Patent. As seen from the cover of the '978 Patent (Yawger Decl., Ex. A), the '978 Patent  
18 originated with the filing of U.S. patent application 07/895,934, on June 8, 1992. That  
19 specification and the continuation and continuation-in-part applications based thereon have  
20 resulted in at least 20 U.S. Patents, as shown in the attached patent-family report. [Exhibit 4  
21 hereto] Several of those patents contain claims literally directed to simultaneous measurement of  
22 traces.

23 15. For example, U.S. Pat. Nos. 5,914,465 (claims 1-4) and 5,880,411 (claims 14-18),  
24 each literally recite simultaneous measurement of the capacitance on the touchpad traces.  
25 (Exhibits 5-6 hereto.) Other patents in the family that issued from the related specification  
26 disclosure have no such claims and are directed to different inventions. For example, claims of the  
27 '591, '931 and '411 Patents at issue in the related litigation, which this Court has already  
28 construed, contain claims that are not limited to "simultaneous" measurement of capacitance on

1 conductive lines, but relate to specific “gestures” that can be performed on a touchpad regardless  
2 of the particular method in which the conductors are sensed. (Exhibits 6-8)

3 16. Each of the sections of the ’978 Patent that relate to the different invention of  
4 simultaneous measurement method that Elantech cites (Elantech Brief, 9:23-13:9 (§ IV(B)(1))),  
5 can be found verbatim in a different Synaptics patent in which the “simultaneous” measurement of  
6 the conductors is actually claimed. The table below sets forth the exact correspondence between  
7 the cited portions upon which Elantech relies and the ’411 and ’465 Patents, which actually have  
8 claims directed to this specific method of measuring the conductors. This shows that these  
9 passages in the related specifications refer to different inventions embodied in other claims of other  
10 patents that share the same specification.

| <b>Elantech Brief</b> | <b>’978 Patent</b> | <b>’465 Patent</b> | <b>’411 Patent</b> |
|-----------------------|--------------------|--------------------|--------------------|
| 10:22-25              | 4:55-60            | 4:15-20            | 4:46-51            |
| 10:26                 | 5:5-10             | 4:33-40            | 4:63-5:3           |
| 10:27                 | 5:13-16            | 4:40-43            | 5:4-7              |
| 11:2                  | 5:45-49            | 4:54-58            | 5:34-38            |
| 11:4                  | 6:44-46            | 5:29-31            | 6:9-14             |
| 11:7                  | 13:18-20           | 10:63-65           | 12:52-54           |
| 12:1-4                | 4:10-14            | 3:63-67            | 4:1-5              |
| 12:6-11               | 13:41-61           | 11:19-29           | 13:8-18            |
| 12:12-14              | 13:53-55           | 11:30-39           | 13:19-27           |
| 12:19-22              | 5:49-53            | 4:58-62            | 5:38-42            |
| 12:23-25              | 7:24-26            | 6:8-10             | 6:58-60            |

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18 17. I note in particular that the multiple-finger gesture embodiments described in the  
19 patent, found at column 46, line 46 through column 50, line 2, and column 53, lines 1-16, contain  
20 no such statement of limitation to particular methods of sensing conductive traces. Moreover, the  
21 “Background Of The Invention” portion of the specification contains many separate statements of  
22 different inventive “objects” and the inventors included a separate statement relating to multiple-  
23 finger gestures that says nothing about the particular method of “developing capacitance profiles”:  
24 “Yet another object of the present invention is to provide for the recognition of multiple-finger  
25 gestures and for simulating secondary button clicks.” (Yawger Decl., Ex. A, 5:31-33.) A  
26 completely different paragraph addresses the different invention of “simultaneously” sensing. (*Id.*,  
27 4:55-60.) The ’978 Patent specification describes many different inventions, and specific  
28 statements regarding inventions properly claimed in other patents based upon the same



specification cannot be read into unrelated inventions, especially where, as here, there is no limitation contained in the descriptions of the embodiments that are specifically relevant to what is claimed in the issued patent at hand.

**4. “Identifying the simultaneous presence of at least two user input objects”**

18. One again, the ordinary meaning of this plain-English phrase is clear from the words themselves. To “identify” whether there is a “simultaneous presence of at least two user input objects” simply means to recognize the existence of such a presence, or to decide or determine that such a presence has occurred. Thus, the ordinary meaning of this phrase to one of ordinary skill in the art is simply based on the ordinary meaning of the individual words in the context of the claim and the methods and devices taught by the patent, *i.e.*, “determining that two objects or fingers are on or near the touch pad.” Dr. Mackenzie accepts that this is the ordinary meaning of this phrase, yet opines that this should not be the Court’s construction [MacKenzie ¶30]. Furthermore, Dr. MacKenzie admits that “two objects can be present simultaneously without the second finger being tapped.” [Mackenzie ¶33] The patent does not contain any disavowal of this ordinary meaning nor any teaching away from the ordinary meaning. In fact, the patent contains numerous examples of the simultaneous presence of at least two user input objects that do not require a “second finger tap.” The patent clearly discloses that more detailed profile information is still available and would be used “to discern simple multi-finger gestures” (*i.e.* more than one kind) to allow for a more powerful user interface.” [’978 7:17-20] The specification also discloses that the sensor can detect multiple touching points in a joystick mode, where long touches rather than taps would be the norm, and in a musical keyboard where multiple notes or chords would commonly be held.<sup>1</sup> [’978 Patent, 53:1-16.] Even the abstract describes the “an application of at least two objects on the capacitive touch sensor pad” and not merely a tap. Furthermore, Elantech’s construction, as presented, would encompass the “hop” gesture which often uses a tap of a second finger even though the patent teaches that this gesture “never involves

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<sup>1</sup> Dr. Mackenzie characterizes the joystick and musical instrument applications as “hypothetical.” [MacKenzie ¶36]. These embodiments are described at ’978 Patent, 53:1-16.

1 more than one finger on the pad at any one time.” [’978 Patent, 40:36-37.] The detection of a  
 2 second finger tap is a characteristic of one described embodiment of a zigzag gesture, and the  
 3 patent provides no indication that this is a limitation on the more general phrase “identifying the  
 4 simultaneous presence of at least two user input objects.”

5 19. A gesture is a means of communication contrary to Dr. Mackenzie’s assertions  
 6 [Mackenzie ¶37]. This is simply the ordinary meaning of the word.<sup>2</sup> The fact that electronic  
 7 circuits and software are used to detect, interpret, and further communicate the gesture is  
 8 immaterial. The finger movement itself is a gesture and is a “finger or object action that  
 9 communicates an input to a device.”

10 20. The patent specifications contains over 50 columns of text and over 20 drawings  
 11 that teach various aspects of a touch sensor system that enables the asserted claims. It is directed  
 12 to one with substantial education, skill and experience in the art of touch sensors and human  
 13 interface devices. [Wolfe ¶11, MacKenzie ¶6] As such, it is my opinion that the specification as a  
 14 whole contains teachings adequate to enable one of ordinary skill in the art to practice the asserted  
 15 claims without undue experimentation.

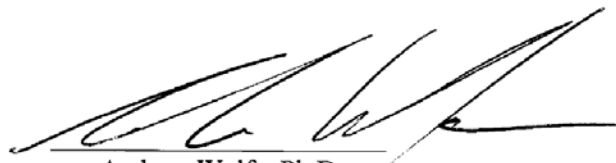
16 21. In particular, the specification explains that “it is clear that the arithmetic unit **16**  
 17 could be modified to produce additional information, such as the width or shape of the sensor trace  
 18 profile, which would aid in the accurate recognition of this gesture.” [’978 Patent, 47:5-9] One of  
 19 ordinary skill would understand how to use the methods disclosed in this patent and known in the  
 20 art to form a capacitive profile. Such a person would also know how to use the data in such a  
 21 capacitive profile to model a curve. Such a person (and perhaps any ordinary person) would  
 22 recognize that certain shapes and widths, as taught above, are characteristic of multiple-finger  
 23 gestures. By incorporating other teachings in the specification such as the characteristics of a tap,  
 24 drag, move, *etc.*, a variety of gestures that embody the claims can be detected and communicated.

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26 <sup>2</sup> Gesture: “a movement usually of the body or limbs that expresses or emphasizes an idea,  
 27 sentiment, or attitude.” [Merriam-Webster’s Online Dictionary, 11th Edition, <http://www.merriam-webster.com/dictionary/gesture>.]  
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1 I declare under penalty of perjury under the laws of the United States of America that, to  
2 the best of my knowledge, the foregoing is true and correct. Executed on October 10, 2008, in  
3 Cupertino, California.

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Andrew Wolfe, Ph.D